

حمل الآن

مجانا وحصريا

# المراجعة رقم (1)

## الترم الاول



# Pure Mathematics

## Senior 2

### Final Revision

MR/ Ahmed Baset





Determine the domain of the following function

The domain of the function  $f(x) = \sqrt{x - 5}$  is ....



ہذاکر  
آنلاین





Determine the domain of the following function

The domain of the function  $f(x) = \frac{2}{\sqrt{7-x}}$  is ....

ہذاکر  
آنلاین



Determine the domain of the following function

The domain of the function  $f(x) = \frac{1}{\sqrt[3]{x} - 3}$  is ....

ہذاکر  
آنلاین



**Determine the domain of the following function**

The domain of the function  $f(x) = \frac{7}{\sqrt{|x| - 2}}$  is ....

ہذاکر  
آنلاین





**Determine the domain of the following function**

*The domain of the function  $f(x) = \sqrt{x^2 - 5x + 6}$  is ....*

ہذاکر  
آنلاین



Determine the domain of the following function

The domain of the function  $f(x) = \log_{(x-2)} 5 - x$  is ..

ہذاکر  
آنلاین





Determine the domain of the following function

The domain of the function  $f(x) = \frac{\sqrt{x-5}}{\sqrt{9-x}}$  is ....

ہذاکر  
آنلاین



Determine the range of the following function

The range of the function  $f(x) = 2 - \frac{3}{x-1}$  is ... ..

ہذاکر  
آنلاین



**Determine the range of the following function**

The range of the function  $f(x) = 2 - \frac{3}{|x - 1|}$  is ... ..








**Determine the range of the following function**

*The range of the function  $f(x) = |x - 3| - 5$  is ... ..*





**Determine the range of the following function**

*The range of the function  $f(x) = \begin{cases} 2 & , x \geq 7 \\ -5 & , x < 7 \end{cases}$  is ... ..*






## Essay questions



If the domain of the function  $f(x) = \frac{x-5}{x^2-4x+k}$  is  $\mathbb{R} - \{2\}$   
then  $k = \dots$







## Essay questions



*If the domain of the function  $f(x) = \sqrt{x - a}$  is  $[-3, \infty[$  then  $a = \dots$*





If  $f, g : R \rightarrow R$  where  $f(x) = 3x + 1$  and  
 $(g + f)(x) = x^3 + 2x - 1$  then  $g(-1) = \dots$

☒ 1

☐ -1

☐ 2

☐ -2



## Essay questions



A man deposited 5000L.E in a bank with annual interest 5% then the total money after 7 years is .....L.E







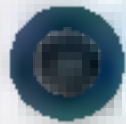
If the curve of the function  $f(x) = \log_a x$  passes through  $(8,3)$  then  $a=...$



2



3



-2



-3



The vertex of the curve  $f(x) = x^2 - 4x + 5$  is ...

☒ (1, 2)

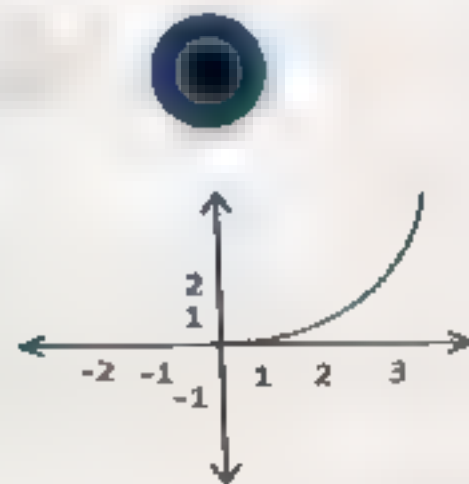
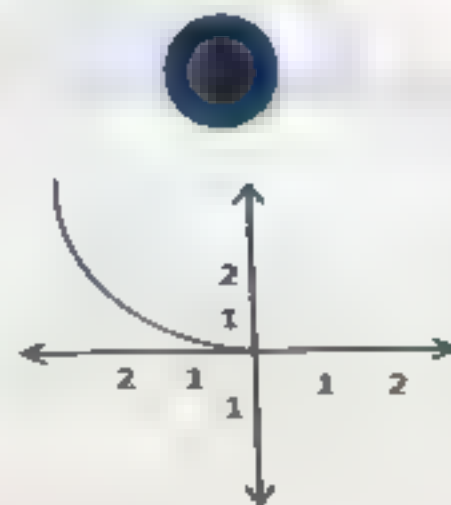
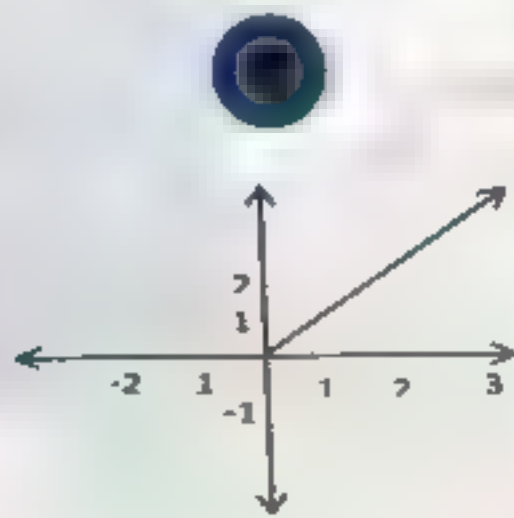
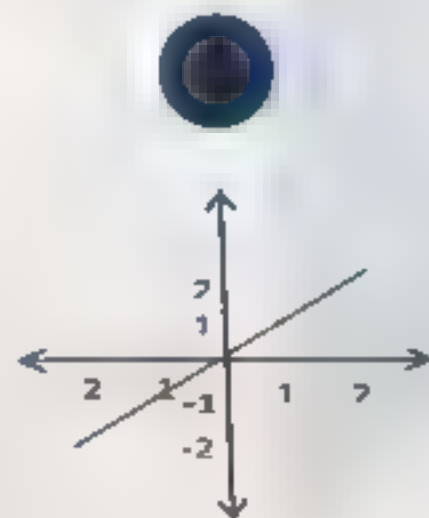
☐ (-1, 2)

☐ (2, 1)

☐ (-2, 1)



Which of the following figures represent the curve  
of a function **its range  $\neq$  its domain** ?







If  $f(x) = \{(1,2), (3,5), (4,1)\}$  and  $g(x) = \{(1,3), (4,2)\}$   
then  $(f + g)(x) = \dots$ .

- ☐  $\{(2,5), (8,3)\}$
- ☐  $\{(1,5), (4,3)\}$
- ☐  $\{(1,5), (8,2), (3,5)\}$
- ☐ otherwise



If the function  $F$  is an even function where  $f(1)=2$  which of the following points  $\in f$

☒  $(-1, 2)$

☐  $(1, -2)$

☐  $(-1, -2)$

☐  $(2, 1)$



If  $f(x) = \sqrt{x}$  and  $g(x) = x^2$  then

$(f \circ g)(x) = \dots\dots$

- ☒  $x$
- ☐  $\pm x$
- ☐  $|x|$
- ☐  $-x$



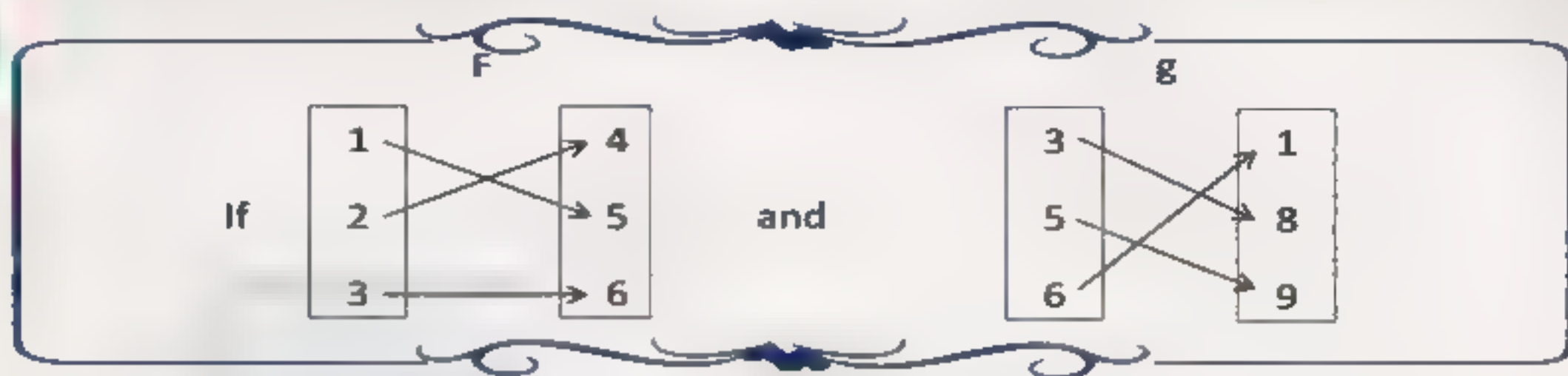
Which of the following is one - to - one function?

☐  $y = |x|$

☐  $y = x^2$

☐  $y = x^3$

☐  $y = 2$



(i)  $(f \circ g)(6) = \dots\dots\dots$

[ 1 , 3 , 5 , 6 ]

(ii)  $(g \circ f)(1) = \dots\dots\dots$

[ 1 , 5 , 6 , 9 ]

(iii)  $f^{-1}(4) = \dots\dots\dots$

[ 1 , 2 , 3 , 5 ]

(iv)  $g^{-1}(1) = \dots\dots\dots$

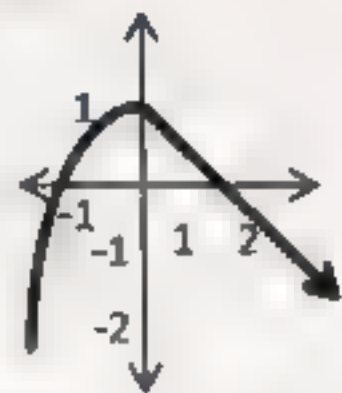
[ 1 , 3 , 5 , 6 ]





If the opposite figure represent the function  $f(x)$

Then  $(f \circ f)(2) = \dots\dots\dots$



☒ 2

☐ -1

☐ 0

☐ 1



If the function  $f$  is the inverse function of  $g$  then  $(f \circ g)(5) = \dots$

☐ 0

☐ 5

☐ 9

☐ 10



If  $f(x) = x^3$  is translated 4 units to the right and 2 units down then the resulted function is .....

☐  $-(x + 4)^3 - 2$

☐  $-2 - (x - 4)^3$

☐  $(x - 4)^3 - 2$

☐  $(x + 4)^3 - 2$



If  $f(x) = 2^x$  is translated one unit to the left then the resulted function is ...

☐  $2^{x-1}$

☐  $2^x - 1$

☐  $2^{x+1}$

☐  $2^x + 1$



The function  $f(x) = 3^x$  is the image of  $g(x) = -3^x$  by reflection in the straight line .....

☐  $x=0$

☐  $y=0$

☐  $x=y$

☐  $x = -y$





If the function  $f$  is real function its domain is  $[-2,3]$  then the domain of  $F(x-2)$  is .....

☐  $[-4,1]$

☐  $[0,3]$

☐  $[0,5]$

☐  $[-2,3]$



If the function  $f$  is real function its domain is  $[-2,3]$  then the domain of the function  $f(x)+2$  is .....

☐  $[-4,1]$

☐  $[0,3]$

☐  $[0,5]$

☐  $[-2,3]$



*The solution set of the equation  $|x + 1| + |x| = 0$  is ...*

- ☐  $\{0\}$
- ☐  $\{-1\}$
- ☐  $\{0, -1\}$
- ☐  $\emptyset$



*The solution set of the equation  $|x - 2| = 2 - x$  is .....*

- ☒  $\{0\}$
- ☐  $] -\infty, 2]$
- ☐  $] -\infty, 2[$
- ☐  $\emptyset$



The solution set of the inequality  $\sqrt{x^2 - 6x + 9} \leq 3$  is ....

- ☐  $R^-$
- ☐  $R - ]0,6[$
- ☐  $[0,6]$
- ☐  $R^+$





If  $x \in [-1, 4]$  then  $|2x - 3| \leq \dots$

☐ 1

☐ 4

☐ 5

☐ 8



If  $x > 0$ ,  $y < 0$  then  $\sqrt{x^2} + \sqrt{y^2} - (x + y) = \dots\dots$

- ☒ 0
- ☐  $2x$
- ☐  $2y$
- ☐  $-2y$



*If  $3^x = 2$  then  $3^{x+2} = \dots$*

- ☐ 4
- ☐ 6
- ☐ 12
- ☐ 18



The S.S of the equation  $x^{\frac{4}{3}} - 10 \times x^{\frac{2}{3}} + 9 = 0$

- ☒ {1,27}
- ☐  $\{\pm 1, \pm 27\}$
- ☐  $\{-1, 27\}$
- ☐  $\{\pm 27\}$



If  $f(x) = a^x$ , then  $f(x + 1) \times f(x - 1) = f(\dots)$

☐ 2

☐  $a^{2x}$

☐  $2x$

☐  $x^2$





If  $f(x) = a^x$ ,  $a > 1$  and  $f(x) < 1$  then  $x \in \dots$

- ☒  $R^+$
- ☐  $R^-$
- ☐  $]0,1[$
- ☐  $]1, \infty[$



If  $f(x) = (a - 2)^x$  then  $x \in \dots$

- ☐  $\mathbb{R}^+$
- ☐  $\mathbb{R}^+ - \{1\}$
- ☐  $]2, \infty[$
- ☐  $]2, \infty[ - \{3\}$



If  $(a,b)$  lies on the curve  $f(x)=2^x$  which of the following points  $\in$  the function

$$g(x) = \left(\frac{1}{2}\right)^x$$

- ☐  $(a,b)$
- ☐  $(-a,b)$
- ☐  $(a,-b)$
- ☐  $(a, \frac{1}{2}b)$



The image of the point  $(3,5)$  by reflection in the straight line  $y=x$  is ....

- ☒  $(3,-5)$
- ☐  $(5,3)$
- ☐  $(5,-3)$
- ☐  $(-3,-5)$



If  $\log 2 = x$  and  $\log 3 = y$  then  $\log 24 = \dots$

☐  $x^3 + y$

☐  $x + y^3$

☐  $3x + y$

☐  $x + 3y$



If the curve  $y = \log_4(1 - ax)$  passes through the point  $\left(\frac{1}{4}, -\frac{1}{2}\right)$   
then  $a = \dots$

☐ 2

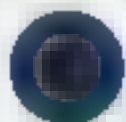
☐ 3

☐ 4

☐ 6



$$\log_{ab} \frac{1}{a} + \log_{ab} \frac{1}{b} = \dots$$



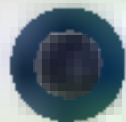
$$\frac{a}{b}$$



$$\frac{b}{a}$$



$$1$$



$$-1$$





$$\log_b a \times \log_c b \times \log_d c = \dots$$

- ☒ 1
- ☐  $\log a$
- ☐  $\log d$
- ☐  $\log_d a$



If  $\log_x y = \log_y x$  then ... ..

- ☐  $x = y$
- ☐  $x = \frac{1}{y}$
- ☐  $y = x^2$
- ☐  $a, b$  together



$$3^{\log_3 x} = \dots$$

- ☒ 1
- ☐ 3
- ☐  $x$
- ☐  $3x$



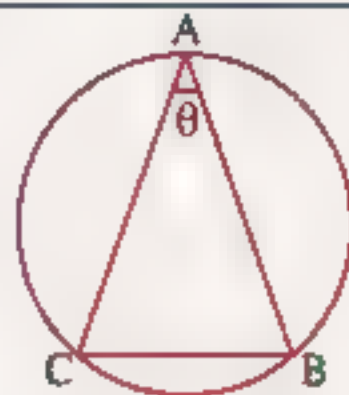
$$\log \tan 1^\circ + \log \tan 2^\circ + \log \tan 3^\circ + \dots + \log \tan 88^\circ + \log \tan 89^\circ = \dots\dots\dots$$

- ☒ Zero
- ☐ 1
- ☐ 10
- ☐ 89



In the opposite figure :

ABC is a triangle inscribed in a circle whose radius length is 4 cm. ,  $m(\angle BAC) = \theta^{\text{rad}}$  , then  $\lim_{\theta^{\text{rad}} \rightarrow 0} \frac{BC}{\theta^{\text{rad}}} = \dots\dots\dots$



☒ 2

☐ 4

☐ 6

☐ 8




If the ratio among the measures of the angles of a triangle is  $8 : 3 : 1$ , then the ratio between the longest two sides in the triangle is . . . .

☐  $\sqrt{3} : 2$

☐  $\sqrt{6} : 2$

☐  $8 : 3$

☐  $8 : 5$



If  $3^a = 4^b$ , then  $9^{\frac{a}{b}} + 16^{\frac{b}{a}} = \dots\dots\dots$

- ☒ 7
- ☐ 12
- ☐ 20
- ☐ 25





If  $\lim_{x \rightarrow \infty} \frac{3k|x|}{4x+3} = 6$ , then  $k = \dots\dots\dots$

☐ 6

☐  $\frac{3}{4}$

☐ 8

☐ 3



If  $f(x) = x^3$ , then the image of the curve of  $f$  by reflection in  $x$ -axis and translation 3 units in the direction of  $\overrightarrow{OX}$  and two units in the direction of  $\overrightarrow{Oy}$  is ... ..

- ☒  $-(x-3)^3 - 2$
- ☐  $-(x+3)^3 + 2$
- ☐  $-(x+3)^3 - 2$
- ☐  $-[(x+3)^3 + 2]$



If  $f(x) = x + 1$  ,  $g(x) = \frac{x^2 - 1}{x - 1}$  , then  $\lim_{x \rightarrow 1} (g \circ f)(x) = \dots\dots\dots$

☒ 1

☐ 2

☐ -2

☐ 3



If  $\log_2 3 \times \log_3 4 \times \log_4 5 \times \dots \times \log_n (n+1) = 10$ , then  $n = \dots\dots\dots$

- ☒ 9
- ☐ 10
- ☐ 11
- ☐ 1023



The domain of the function  $f : f(x) = \sqrt{\sqrt{x^2 - 1}}$  is .....

- ☐  $] -1, 1[$
- ☐  $[-1, 1]$
- ☐  $\mathbb{R} - ] -1, 1[$
- ☐  $\mathbb{R} - \{-1, 1\}$



In  $\triangle ABC$  ,  $m(\angle A) = 112^\circ$  ,  $m(\angle B) = 33^\circ$  ,  $c = 19$  cm.  
 , then the diameter length of its circumcircle  $\approx$  ..... cm.

☐ 16

☐ 17

☐ 32

☐ 33



If  $2^x = 20$  ,  $n < x < n + 1$  ,  $n$  is an integer , then  $n = \dots\dots\dots$

- ☒ 4
- ☐ 5
- ☐ 6
- ☐ 10



In  $\Delta XYZ$ ,  $y^2 + z^2 - x^2 = 2yz \times \dots\dots\dots$

☒  $\cos x$

☐  $\sin Z$

☐  $\cos Z$

☐  $\sin x$





If the function  $f : f(x) = \begin{cases} 3x-1 & , \quad x \neq 2 \\ 6 & , \quad x = 2 \end{cases}$ , then  $\lim_{x \rightarrow 2} f(x) = \dots\dots\dots$

☒ - 5

☐ 5

☐ 6

☐ Does not exist.



If  $f(x) = \log_2(x + a)$  and  $f^{-1}(2) = -3$ , then  $a = \dots\dots\dots$

☒ - 7

☐ 7

☐ 3

☐ 1




The exponential function whose base is  $a$  , is increasing if .....

☐  $a > 0$

☐  $a > 1$

☐  $0 < a < 1$

☐  $a = 1$


$$\lim_{x \rightarrow \infty} (4 - 3x - x^3) = \dots\dots\dots$$

☐  $\infty$

☐ does not exist.

☐  $-1$

☐  $-\infty$



If  $f$  is an odd function ,  $a \in$  the domain of  $f$  , then  $f(a) + f(-a) = \dots\dots\dots$

- ☒  $2 f(a)$
- ☐  $2 f(-a)$
- ☐ zero
- ☐  $f(a)$



If  $f$  is an odd function , then  $\frac{2 f (3) + 7 f (-3)}{10 f (-3)} = \dots\dots\dots$

☒ 3

☐ -3

☐  $\frac{1}{2}$

☐  $-\frac{1}{2}$



If  $f(x) = \sqrt{x+3}$  ,  $g(x) = \sqrt{6-x}$  , then  $(f \circ g)(5) = \dots\dots\dots$

- ☒ undefined
- ☐ zero
- ☐ 5
- ☐ 2



The range of the function  $f : f(x) = \begin{cases} 2x+3 & , \quad x > 3 \\ 9 & , \quad x < 3 \end{cases}$  is .....

☐ {3}

☐  $\mathbb{R}$

☐  $]9, \infty[$

☐  $[9, \infty[$





In  $\triangle ABC$  , if  $m(\angle B) = 60^\circ$  ,  $m(\angle C) = 30^\circ$  ,  $c = 4$  cm. , then  $b = \dots\dots\dots$  cm.

☐ 4

☐ 8

☐  $2\sqrt{3}$

☐  $4\sqrt{3}$



If the area of  $\Delta ABC$  is " $X$ " and the radius length of its circumcircle is " $r$ "

, then  $\frac{4 r X}{a b c} = \dots\dots\dots$

☐  $\frac{a}{\sin A}$

☐  $\cos A$

☐ 1

☐  $r$

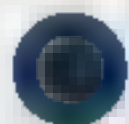


If  $\lim_{x \rightarrow a^+} f(x) = l$ ,  $\lim_{x \rightarrow a^-} f(x) = m$  and the function is continuous at  $x = a$   
 , then  $l^2 + m^2 - 2lm = \dots\dots\dots$

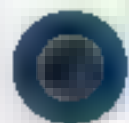
- ☒ 1
- ☐ 3
- ☐ zero
- ☐ 6



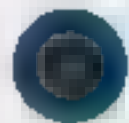
If  $a = \sin B$  ,  $b = \sin C$  ,  $c = \sin A$  , then the circumference of the circumcircle of triangle ABC equals .....



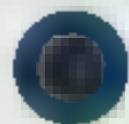
1



$2\pi$



$\frac{1}{2}\pi$



$\pi$



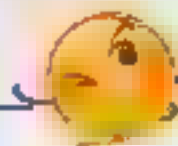
The solution set of the inequality :  $\sqrt{9x^2 - 12x + 4} + 2|4 - 6x| \geq 20$  is .....

☐  $\mathbb{R} - ]\frac{-2}{3}, 2[$

☐  $] \frac{-2}{3}, 2[$

☐  $\mathbb{R} - [\frac{-2}{3}, 2]$

☐  $[\frac{-2}{3}, 2]$



## Essay questions



If the function  $f : f(x) = \begin{cases} x^2 + a x - 2 & , \quad x > 2 \\ 4 & , \quad x = 2 \\ 5 a + b x & , \quad x < 2 \end{cases}$  is continuous at  $x = 2$ , find the value of each of  $a, b$





## Essay questions



**Find algebraically in  $\mathbb{R}$  the solution set of the equation :  $|x - 3| = |9 - 2x|$**





## Essay questions



$$\text{If } f(x) = 7^{x+1}$$

, find the value of  $x$  which satisfies :  $f(2x-1) + f(x-2) = 50$







## Essay questions



If  $\lim_{x \rightarrow a} |3x + 2| = 14$ , find the value of : a





## Essay questions




Find the value of each of a and n if :  $\lim_{x \rightarrow \infty} \frac{4ax^n - 4x + 5}{3 - 9x + 8x^2} = 3$





## Essay questions



$$\lim_{x \rightarrow \infty} \left( \frac{x+1}{\sqrt{x^2-1}} + a^{\frac{1}{x}} \right) \text{ where } a \text{ is positive.}$$


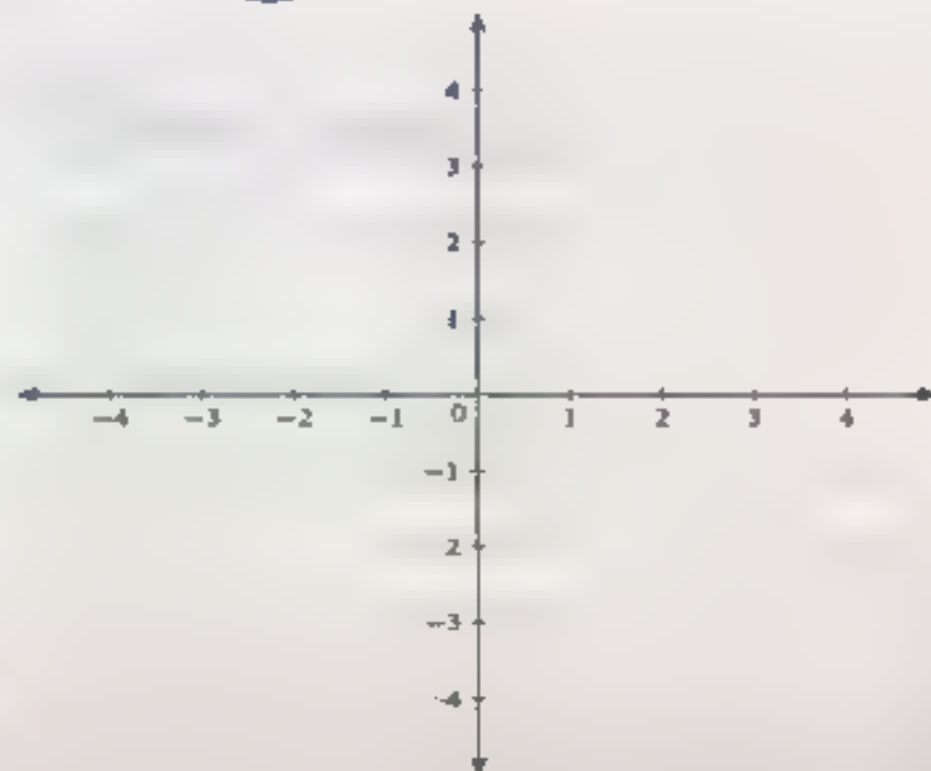


## Essay questions



Represent graphically the following functions:

$$f(x) = 2 - x^2$$



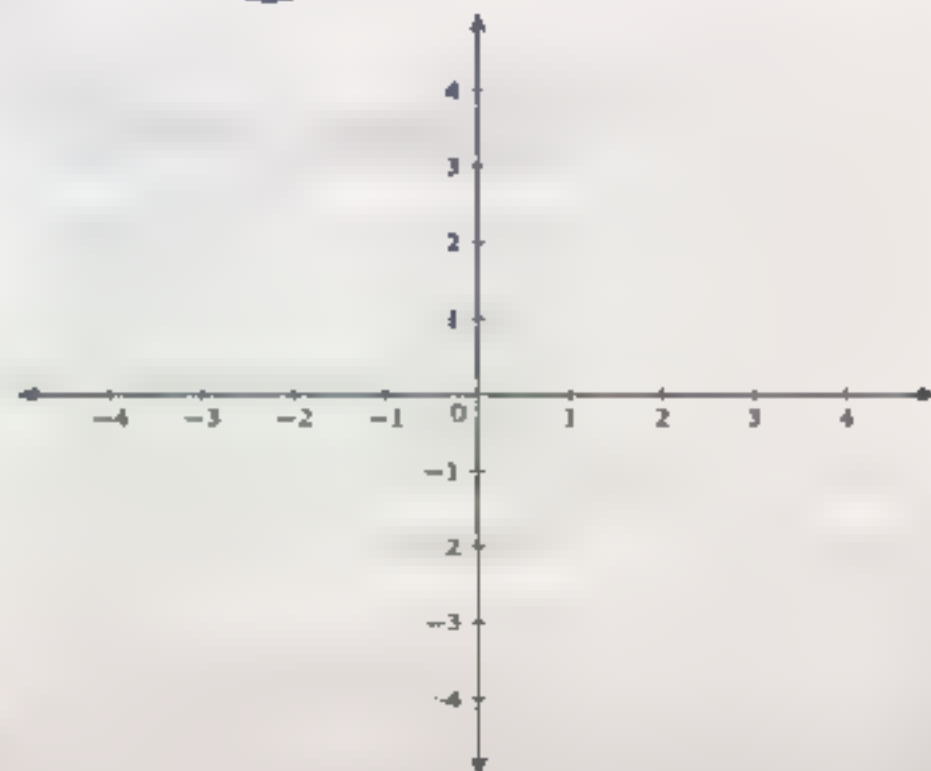


## Essay questions



Represent graphically the following functions:

$$f(x) = \frac{x-1}{x}$$



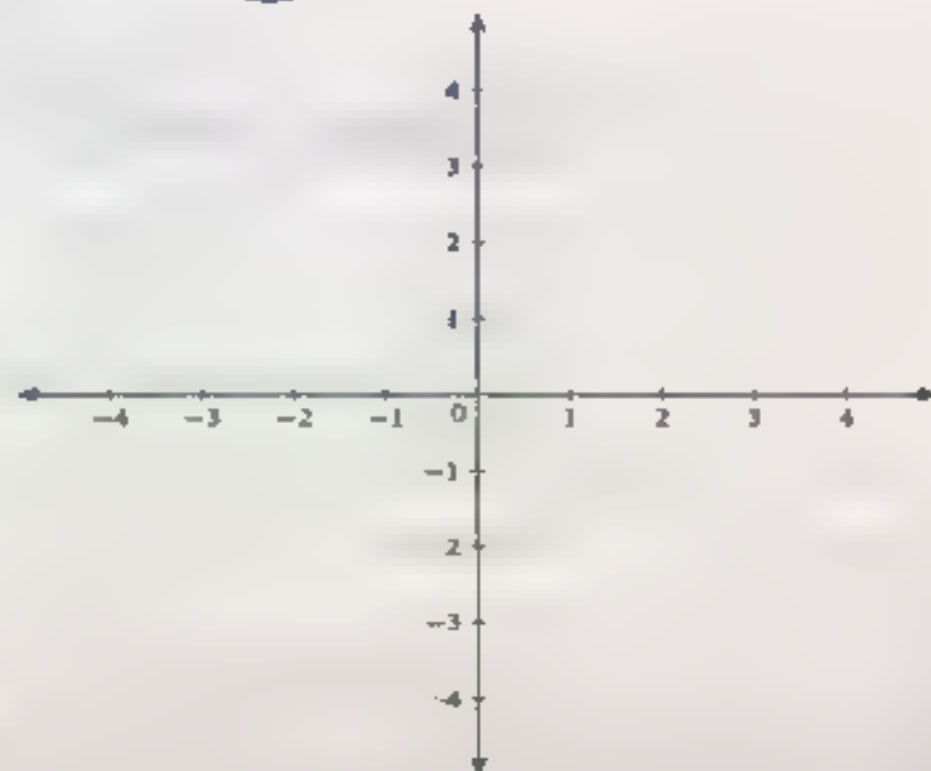


## Essay questions



Represent graphically the following functions:

$$f(x) = (x - 1)^3$$



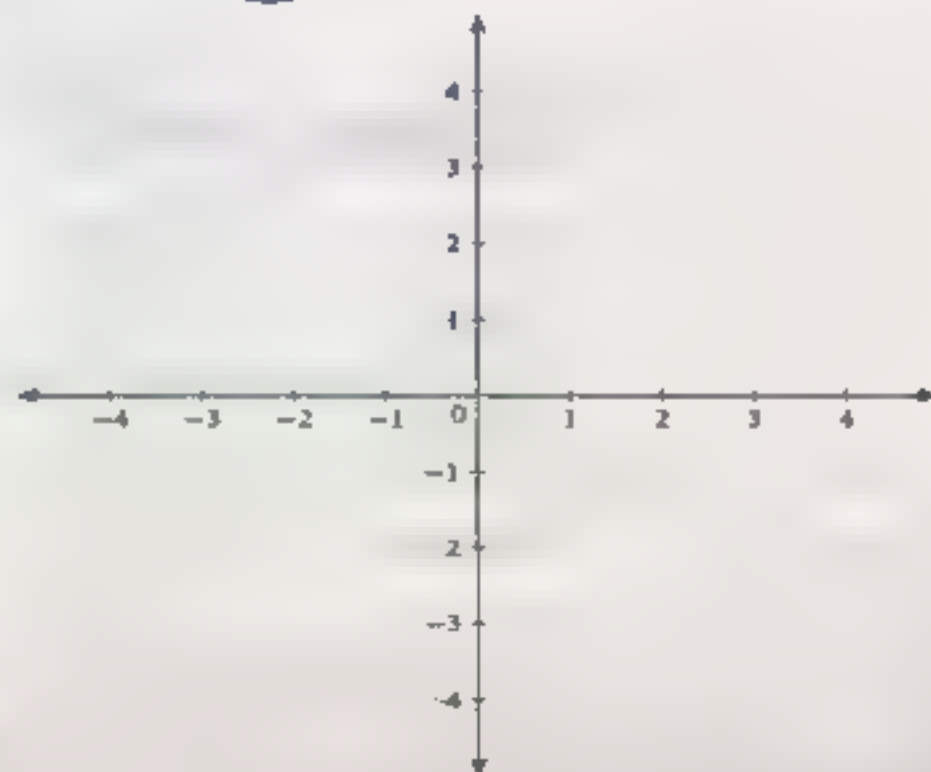


## Essay questions



Represent graphically the following functions:

$$f(x) = |x + 1| - 2$$





Find each of the following



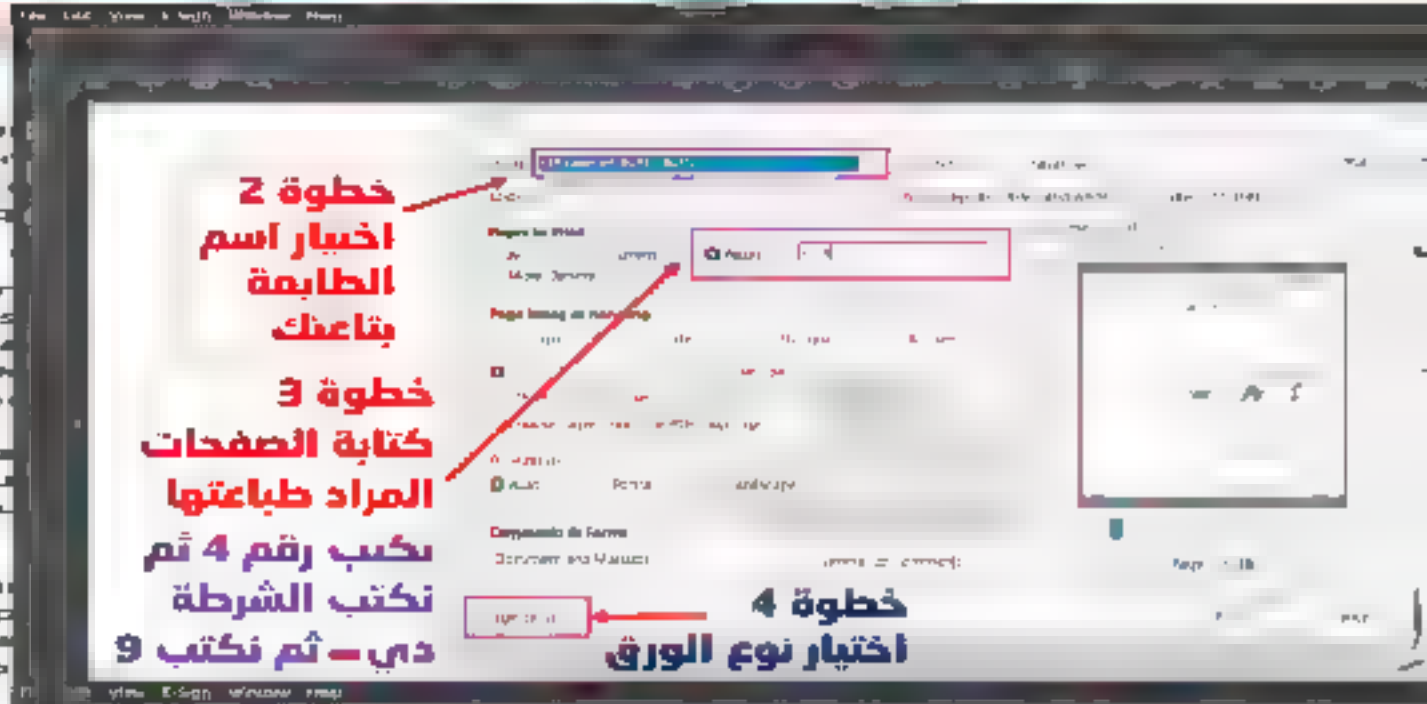
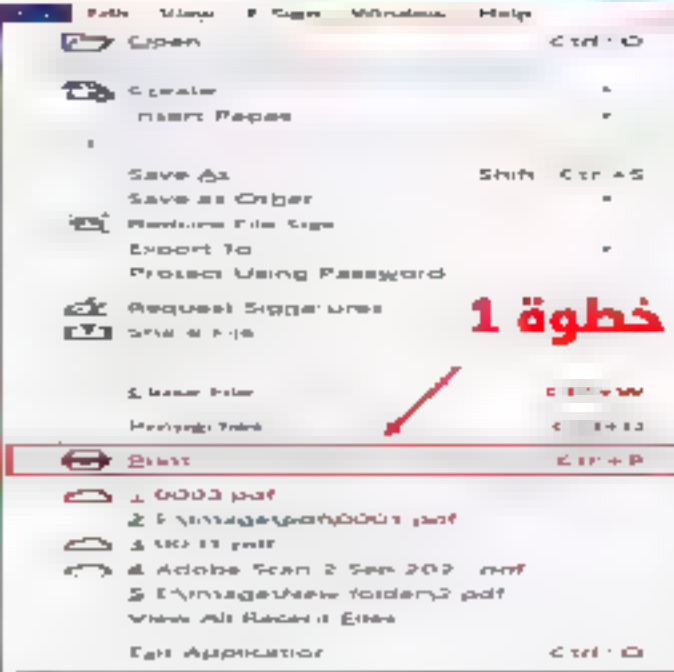
$$\lim_{x \rightarrow 0} \frac{(2x-1)^2 - 1}{5x}$$

$$\lim_{x \rightarrow 9} \frac{x + \sqrt{x} - 12}{x - 9}$$



# كيفية طباعة صفحات معينة من ملف معين

## مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9



فصل الأول

مجاناً وحصرياً

# امتحاننا رقم (1)

## الترم الاول





Model Exam of Second year secondary First Term 2023- 2024

Mathematics

Time 3 hours

calculator is permitted

نموذج سرشدى ربصيات نصف الكلى الكسوى (علمى) لنعلم الدراسى ٢٠٢٣ - ٢٠٢٤ م

First: Choose the correct answer

- 1) The point of symmetry of the function  $f(x) = (x + 2)^3 - 1$  is .....
- A  $(2, 1)$       B  $(-2, 1)$       C  $(-2, -1)$       D  $(2, -1)$
- 2) The solution set of the inequality  $x - 5 < 3$  in  $R$  is .....
- A  $]2, 8[$       B  $[2, 8]$       C  $R - ]2, 8[$       D  $R - [2, 8]$
- 3) The solution set of the equation  $\sqrt[3]{x^2} = 4$  in  $R$  is .....
- A  $\{8\}$       B  $\{16\}$       C  $\{-8, 8\}$       D  $\{-16, 16\}$
- 4) If  $\lim_{x \rightarrow 1} \frac{x^2 + mx + k}{x - 1} = 3$ , then  $m \times k = \dots\dots\dots$
- A 2      B 6      C -2      D -6
- 5)  $\lim_{x \rightarrow 1} \frac{x^6 - 64}{x^7 - x^2} = \dots\dots\dots$
- A 8      B 16      C 32      D 64



مستند

- 6) Number of possible solution of  $\Delta ABC$ , where  $m(\angle A) = 47^\circ$ ,  $a = 4\text{ cm}$ ,  $b = 6\text{ cm}$  equals ....
- A zero                      B 2                      C 3                      D infinite
- 7) In  $\Delta ABC$ , If  $a = 18\text{ cm}$ ,  $b = 24\text{ cm}$ ,  $c = 30\text{ cm}$ , then  $\cos A =$  .....
- A  $\frac{3}{5}$                       B  $\frac{1}{4}$                       C  $\frac{4}{5}$                       D  $\frac{3}{4}$

**Second: Choose the correct answer**

- 1) The domain of the function  $f(x) = \sqrt{x}$  is .....
- A  $\mathbb{R} - \{0\}$                       B  $\mathbb{R}$                       C  $[0, \infty[$                       D  $] -\infty, 0]$
- 2) The One To One function of the following is  $f(x) =$  .....
- A 6                      B  $|x|$                       C  $\sin x$                       D  $x$
- 3) If  $f(x) = 3^x$ , then  $f(x+2) \times f(x-2) =$  .....
- A  $f(2x)$                       B  $f(x)$                       C  $f(3x)$                       D  $2f(x)$
- 4) If  $(a, b) \in f(x)$ , then .....  $\in f^{-1}(x)$
- A  $(a, b)$                       B  $(b, a)$                       C  $(-a, -b)$                       D  $(-b, -a)$



# عاشور لغز الصناد

وزارة التربية والتعليم  
الإدارة المركزية لتطوير المناهج  
مكتب مستشار الرياضيات

5) If  $3^x = 7$ , then  $x = \dots$

A  $\log_3 7$

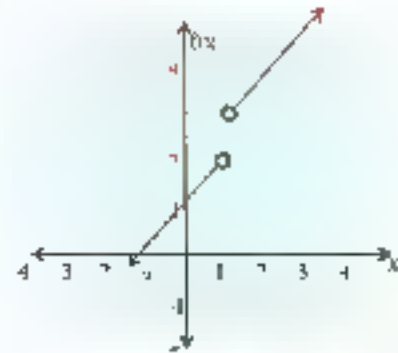
B  $\log_7 3$

C  $\log 3$

D  $\log 7$

6) In the opposite figure

$\lim_{x \rightarrow 1} f(x) = \dots$



A 1

B 2

C 3

D not exist

7)  $\lim_{x \rightarrow \frac{\pi}{2}} 6x^2 \csc 2x \cot x = \dots$

A 2

B 3

C 6

D 12

**Thrid: Choose the correct answer**

1) If  $f$  is a function,  $f(x) = \begin{cases} x^2 + 1 & : x < 1 \\ 3x - 1 & : x > 1 \end{cases}$

then  $\lim_{x \rightarrow 1} f(x) = \dots$

A 1

B 2

C 3

D not exist



# عاشور لغت انصار

وزارة التربية والتعليم  
الإدارة المركزية لتطوير المناهج  
مكتب مستشار الرياضيات

- 2) Area of the circumcircle of  $\Delta ABC$  in which  $m(\angle A) = 30^\circ$ ,  $a = 10$  cm, is \_\_\_\_\_  $\text{cm}^2$   
A  $10\pi$                       B  $20\pi$                       C  $100\pi$                       D  $25\pi$
- 3) In the triangle ABC, if  $\sin^2 A + \sin^2 B = \sin^2 C$ , then the triangle is \_\_\_\_\_  
A equilateral  $\Delta$                       B isosceles  $\Delta$                       C right angled  $\Delta$                       D obtuse angled  $\Delta$
- 4)  $\lim_{x \rightarrow \infty} \frac{4x - 7}{\sqrt{x^2 - 1}}$  \_\_\_\_\_  
A 1                      B 4                      C 7                      D 7
- 5)  $\lim_{x \rightarrow 0} \frac{\tan 4x^2 + \sin^2 3x}{x^2}$  \_\_\_\_\_  
A 7                      B 13                      C 19                      D 25
- 6) Domain of the function  $f : f(x) = \frac{1}{x-1} + 2$  is \_\_\_\_\_  
A  $\mathbb{R}$                       B  $\emptyset$                       C  $\mathbb{R} - \{1\}$                       D  $\mathbb{R} - \{2\}$



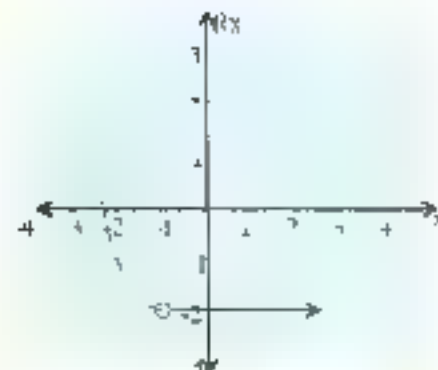
# عاشور لغز الفناد

وزارة التربية والتعليم  
الإدارة المركزية لتطوير المناهج  
مكتب مستشار الرياضيات

- 7) The solution set of the equation  $\log_2(4^x - 2) = x$  is .... where  $x \in \mathbb{R}$   
A { 1, 2}      B {1}      C { -1}      D  $\emptyset$

## Fourth: Choose the correct answer

- 1) The opposite figure represents the graph of the function  $f$ , then  $(f \circ f)(1) = \dots$



- A zero      B 1      C 2      D 1
- 2) If  $2^x = 3$  and  $3^y = 8$ , then  $3^{xy} = \dots$   
A 3      B 8      C 24      D 27
- 3) A man bought a car for 75000 pound, if the price of the car decreases by a rate of 2 % yearly, then the price of the car after 10 years will become ..... pound  
(to the nearest pound)  
A 68120      B 61280      C 65280      D 64218



# علاء محمد الغزالي

وزارة التربية والتعليم  
الإدارة المركزية لتطوير المناهج  
مكتب مستشار الرياضيات

- 4) In the triangle ABC if  $m(\angle A) = 80^\circ$ ,  $m(\angle B) = 60^\circ$  and  $c = 10$ , then  $a =$  . (nearest cm)  
A 15                      B 14                      C 16                      D 13
- 5) In the triangle ABC if  $a = 36\text{cm}$ ,  $b = 25\text{cm}$ ,  $m(\angle C) = 86^\circ$ , then  
 $c =$  . (to nearest cm)  
A 24                      B 42                      C 38                      D 30
- 6)  $\lim_{x \rightarrow \infty} \frac{6x^2 + x + 1}{2x^2 + 7}$   
A 1                      B 2                      C 3                      D 7

## Fifth:

Draw the curve of the function  $f(x) = (x+2)^2 - 3$ ,  
then from the graph determine  
the range, its monotonicity, is it even or odd or otherwise?

## Sixth :

If the function  $f(x) = \begin{cases} x^2 + a & x > 3 \\ x + b & x < 3 \end{cases}$   
is continuous function at  $x = 3$ , then find the value of  $a + b$

Handwritten signature in red ink.





سازمان آموزش و ترویج  
دانش

وزارة التربية والتعليم  
الإدارة المركزية لتطوير المناهج  
مكتب مستشار الرياضيات

Model Answer Exam of Second year secondary First Term 2023- 2024  
Pure Mathematics

نموذج إجابة امتحان استرشادي رياضيات بحتة لصف الثاني الثانوي (عمومي) للعام الدراسي ٢٠٢٣ - ٢٠٢٤ م

إجابة السؤال الأول: (سبع درجات كل مفردة درجة واحدة)

المفردة	1	2	3	4	5	6	7
الإجابة	C	A	C	C	D	A	C

إجابة السؤال الثاني: (سبع درجات كل مفردة درجة واحدة)

المفردة	1	2	3	4	5	6	7
الإجابة	D	D	A	B	A	D	B

إجابة السؤال الثالث: (سبع درجات كل مفردة درجة واحدة)

المفردة	1	2	3	4	5	6	7
الإجابة	B	C	C	B	B	D	B

إجابة السؤال الرابع: (ست درجات كل مفردة درجة واحدة)

المفردة	1	2	3	4	5	6
الإجابة	B	D	B	A	B	C

سازمان آموزش و ترویج  
دانش

من اول الفرض ايضا

وزارة التربية والتعليم  
الإدارة المركزية لتطوير المناهج  
مكتب مستشار الرياضيات

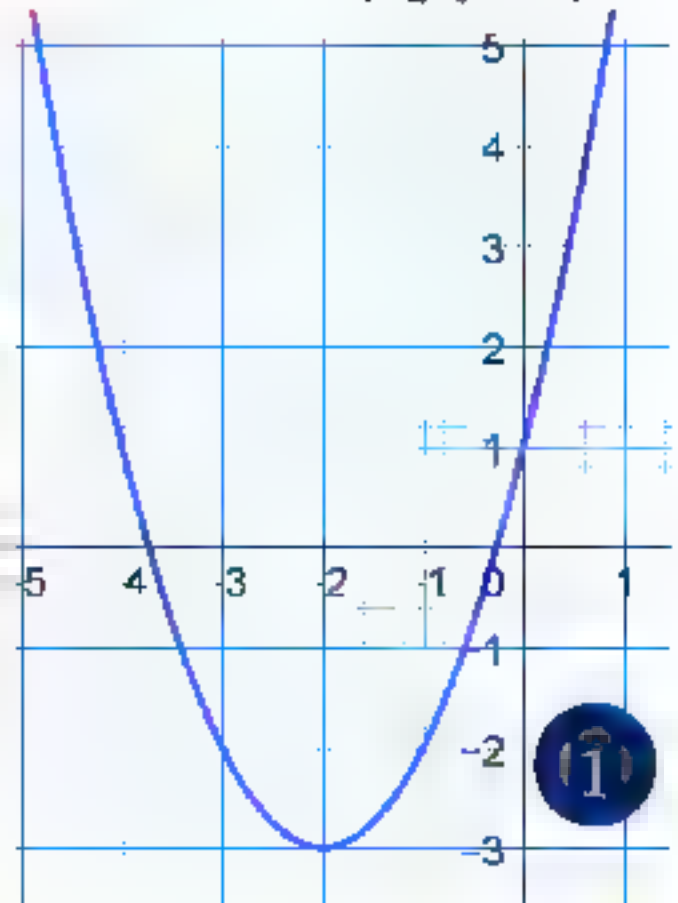
5)

$$\text{Range} = [-3, \infty[$$

Type: neither even nor odd

$]-\infty, -2[$  f is decreasing

$]-2, \infty[$  f is increasing



6)

f is continuous at  $x=3$

$$f(3^+) = f(3^-) = f(3)$$

$$9-a=3+b$$

$$a+b=6$$



من اول الفرض ايضا

أسئلة استرشادية للنصف الثاني الثانوي

رياضيات ( ١ ) لقسم العلمي باللغة الإنجليزية

Question (1)

$$\lim_{x \rightarrow 1} \frac{x^3 - 6x}{5x} = \dots$$

- A 1
  - B  $\frac{7}{5}$
  - C zero
  - D 5
- 

Question (2)

In  $\triangle ABC$  , if  $b = 5$  cm ,  $m(\angle B) = 30^\circ$  , then length of the diameter of the circumcircle of  $\triangle ABC$  equals . . cm

- A  $\frac{10\sqrt{3}}{3}$
  - B  $2\sqrt{5}$
  - C 10
  - D  $\frac{5\sqrt{3}}{2}$
-

Question (3)

If  $\lim_{h \rightarrow 0} \frac{(1+3h)^4 - 1}{h} = k$  then  $k =$  \_\_\_\_\_

- A 6
  - B 4
  - C 3
  - D 12
- 

Question (4)

The rule which does not represent a function is \_\_\_\_\_

A  $y = x^3 + 2$  ,  $x \in [1, 3[$

B  $y = 2x$  ,  $x \in \mathbb{R}$

C  $y = \begin{cases} 2x + 1 & x \geq 2 \\ x^2 - 1 & , x \leq 2 \end{cases}$

D  $y = \begin{cases} x + 1 & , x > 3 \\ 2x & x \leq 3 \end{cases}$

---

Question (5)

In  $\triangle ABC$  if  $a = 4$  cm ,  $m(\angle A) = 35^\circ$  ,  $m(\angle B) = 85^\circ$  then the perimeter of  $\triangle ABC \simeq$  \_\_\_\_\_ , cm

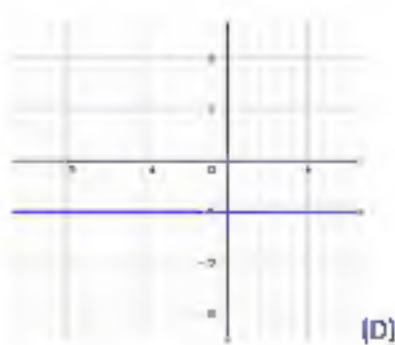
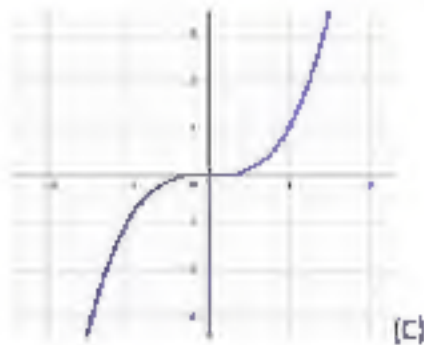
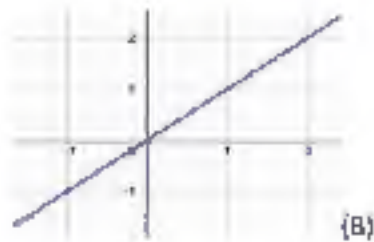
- A 16
  - B 17
  - C 18
  - D 19
-

Question (6) :

If  $f$  and  $g$  are two real functions where  $f(x) = x^2 - 4$  and  $g(x) = \sqrt{8 - x}$ , then determine the domain of the function  $\frac{g}{f}(x)$ .

Question (7) :

The graph which represents a cubic function is .....



A. (B)

B. (A)

C. (C)

C. (D)

---

Question (8) :

The function  $f$  where  $f(x) = \begin{cases} 2 - x & , -2 \leq x \leq 1 \\ x & , 1 < x \leq 5 \end{cases}$

is .....

A. decreasing on  $] -2 , 1[$

B. decreasing on  $]1 , 5[$

C. increasing on  $] -2 , 5[$

D. increasing on  $] -2 , 1[$

Question (9) :

If  $f : \mathbb{R}^* \rightarrow \mathbb{R}$  where  $f(x) = \frac{1}{x} + 3$ , then  $f(x)$  is .....

A. odd

B. even

C. not one-to-one

D. one-to-one

---

Question (10) :

If the graph of the function  $f : f(x) = \log_{\frac{1}{2}} x$  passes through the point  $(512, k)$ , then find the value of  $k$ .

---

Question (11) :

Find  $\lim_{x \rightarrow 0} \frac{2\sin^2 x}{1 - \cos^4 x}$

---

Question (12) :

If ABCD is parallelogram, then  $\frac{AD}{\sin(\angle DBA)} = \dots\dots\dots$

A.  $\frac{BC}{\sin(\angle CBD)}$

B.  $\frac{AB}{\sin(\angle ABD)}$

C.  $\frac{DC}{\sin(\angle DBC)}$

D.  $\frac{\sin(\angle A)}{BD}$

---

